

CLAIMS:

1. An apparatus suitable for use in a convertible vehicle comprising:

a foldable convertible top having a substantially rigid front portion arranged and constructed to include a downwardly directed component of movement towards a windshield frame of the vehicle during a convertible top closing operation, the front portion being further arranged and constructed to engage the vehicle windshield frame in a convertible top closed position, and

at least one dampening device disposed at a rear portion of the convertible top and being operably coupled to the front portion so as to impart mechanical resistance against the downwardly directed component of the movement of the front portion towards the vehicle windshield frame during the convertible top closing operation, the dampening device being operably coupled between two linkages provided within the convertible top, the two linkages being arranged and constructed so that a distance between the two linkages increases when the front portion is downwardly moving towards the windshield frame.

2. An apparatus as in claim 1, wherein the two linkages comprise a tensioning bow and a rear portion of a dead center point linkage.

3. An apparatus as in claim 2, wherein the convertible top further comprises a plurality of lateral frame portions, and wherein the dead center point linkage is disposed along a longitudinal direction of the lateral frame portions and a front portion of the dead center point linkage is operably coupled to the front portion.

4. An apparatus as in claim 3, wherein the front portion comprises a substantially rigid structural member arranged and constructed to transversely extend between the windshield frame and the dead center point linkage.

5. An apparatus as in claim 4, further comprising a fabric material covering the rigid structural member.

6. An apparatus as in claim 5, wherein the dampening device is arranged and constructed to provide mechanical resistance only when subjected to traction loading.
7. An apparatus as in claim 6, wherein the dampening device is an oil-filled shock absorber comprising an extendable and retractable piston.
8. An apparatus as in claim 7, wherein the oil-filled shock absorber is disposed in parallel with a longitudinally-extending, side portion of the tensioning bow, and further comprising a traction member having a first end coupled to the piston and a second end coupled to the rear portion of the dead center point linkage, the traction member extending via a direction-changing element in a manner that changes the direction of at least a portion of the traction member.
9. An apparatus as in claim 8, wherein the direction-changing element is arranged and constructed to change the direction of the traction member by about 90°.
10. An apparatus as in claim 9, wherein the piston of the dampening device is arranged and constructed to extend by a piston stroke length of at least 35 mm when the front portion is moving downwardly towards the vehicle windshield frame.
11. An apparatus as in claim 1, wherein the dampening device is arranged and constructed to provide mechanical resistance only when subjected to traction loading.
12. An apparatus as in claim 1, wherein the dampening device comprises an oil-filled shock absorber comprising an extendable piston.
13. An apparatus as in claim 12, wherein the oil-filled shock absorber is disposed in parallel with a longitudinally-extending, side portion of the tensioning bow, and further comprising a traction member having a first end coupled to the piston and a second end coupled to the rear portion of the dead center point linkage, the traction member extending

via a direction-changing element in a manner that changes the direction of at least a portion of the traction member.

14. An apparatus as in claim 13, wherein the direction-changing element is arranged and constructed to change the direction of the traction member by about 90°.

15. An apparatus as in claim 1, wherein the piston of the dampening device is arranged and constructed to extend by a piston stroke length of at least 35 mm when the front portion is moving downwardly towards the vehicle windshield frame.

16. An apparatus suitable for use in closing a convertible top, comprising:

means for generating a mechanical resistance within a rear portion of the convertible top during at least a portion of a convertible top closing operation, and

means for transmitting the generated mechanical resistance to a front portion of the convertible top so as to slow downward movement of the front portion towards a vehicle windshield frame.

17. An apparatus as in claim 16, further comprising:

pivots connected linkages disposed within the rear portion of the convertible top and being arranged and constructed such that an angle defined between the pivotably connected linkages increases during at least a portion of the convertible top closing operation, and

means for applying the generated mechanical resistance so as to slow down the speed at which said angle opens.

18. An apparatus as in claim 17, wherein the mechanical resistance generating means only generates mechanical resistance when the mechanical resistance means is subjected to traction loading.

19. An apparatus as in claim 18, further comprising means for changing the direction of the generated mechanical resistance by at least about 60° between the pivotably connected linkages.

20. A method for closing a convertible top, comprising:
 - generating a mechanical resistance within a rear portion of the convertible top during at least a portion of a convertible top closing operation, and
 - transmitting the generated mechanical resistance to a front portion of the convertible top so as to slow downward movement of the front portion towards a vehicle windshield frame.
21. A method as in claim 20, wherein pivotably connected linkages are disposed within the rear portion of the convertible top and an angle defined between the pivotably connected linkages increases during at least a portion of the convertible top closing operation, the method further comprising applying the generated mechanical resistance so as to slow down the speed at which said angle opens.
22. A method as in claim 21, wherein the mechanical resistance is only generated during traction loading.
23. A method as in claim 22, further comprising changing the direction of the generated mechanical resistance by at least about 60° between the pivotably connected linkages.
24. A method as in claim 23, wherein the convertible top closing operation comprises movement of the convertible top from a dead center point to a roof closed position, the mechanical resistance being generated and applied during at least a portion of the convertible top movement between the dead center point and the roof closed position.
25. A method as in claim 20, wherein the convertible top closing operation comprises movement of the convertible top from a dead center point to a roof closed position, the mechanical resistance being generated and applied during at least a portion of the convertible top movement between the dead center point and the roof closed position.